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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,099	04/25/2000	OSAMU YOKOYAMA	105928	1092

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EXAMINER	
JORGENSEN, LELAND R	
ART UNIT	PAPER NUMBER
2675	20

DATE MAILED: 10/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No. 09/530,099	Applicant(s) YOKOYAMA ET AL.	
	Examiner Leland R. Jorgensen	Art Unit 2675	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 28 May 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 21 - 27, 30, 32 - 34, 36 - 40, and 42 - 49 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) 21 - 27 and 49 is/are allowed.

6)☒ Claim(s) 30, 32 - 34, 36 - 40, and 42 - 48 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on 28 May 2004. These drawings are acceptable.

Claim Rejections - 35 USC § 112

2. In view of examiners amendment and remarks, the rejection of claims 21 – 27 and 29 – 49 under 35 U.S.C. 112, first paragraph, is withdrawn.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 30, 34, and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al., USPN 5,185,712, in view of Fujita et al., USPN 5,144,203.

Claim 30

Sato teaches a display device comprising a light source [light sources 118R, 118G, and 118B]. The light source(s) illuminates a display element [liquid crystal display panel 110 comprised of sections 111R, 111G, 111B]. Sato, col. 11, lines 54 – 66; and figure 8. Sato, in figure 8, shows the first, second, and third light sources having luminescent regions substantially the same size as those of display areas of the first second, and third display elements, respectively. Sato, figure 8. Sato teaches an optical system [eyepiece 115 or projection lens

104] that enlarges and displays the image combined by the combining optical system. Sato, col. 9, lines 59 – 61; col. 11, lines 50 – 52; and figures 6 and 8.

Sato does not teach that the light sources are organic electroluminescent elements. Nor does Sato teach a pulse current applied to each of the light sources.

Fujita teaches a driving circuit for an organic electroluminescent element for backlighting a liquid crystal display. Fujita, col. 1, lines 6 – 18. A pulse current supply source provides a pulsing current to the organic electroluminescent element to cause light emission. Fujita, col. 2, lines 39 – 41; col. 5, lines 21 – 34; and figures 13, 18, and 22.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the organic electroluminescent element as taught by Fujita with the display device as taught by Sato because organic electroluminescent element are widely utilized as a backlight for an LCD display. Fujita, col. 1, lines 13 – 18.

Claim 34

Sato teaches a display device comprising a light source. The light source comprises a first light source 118R that emits light in a red color range; a second light source 118G that emits light in a green color range; and a third light source 118G that emits light in a blue color range. Sato teaches first, second and third display elements [display sections 111R, 111G, and 111B] each illuminated by their corresponding light source. Sato, col. 11, lines 54 – 66; and figure 8. Sato teaches a combining optical system [image light synthesizing element 106] that combines images displayed in the first, second, and third display elements. Sato, col. 11, line 67 – col. 12. line 9; and figure 8. Sato, in figure 8, shows the first, second, and third light sources having luminescent regions substantially the same size as those of display areas of the first, second, and

third display elements, respectively. Sato, figure 8. Sato teaches an optical system [eyepiece 115 or projection lens 104] that enlarges and displays the image combined by the combining optical system. Sato, col. 9, lines 59 – 61; col. 11, lines 50 – 52; and figures 6 and 8.

Sato does not teach that the light sources are organic electroluminescent elements. Nor does Sato teach a pulse current applied to each of the light sources.

Fujita teaches a driving circuit for an organic electroluminescent element for backlighting a liquid crystal display. Fujita, col. 1, lines 6 – 18. A pulse current supply source provides a pulsing current to the organic electroluminescent element to cause light emission. Fujita, col. 2, lines 39 – 41; col. 5, lines 21 – 34; and figures 13, 18, and 22.

For the reason stated in claim 30 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the organic electroluminescent element as taught by Fujita with the display device as taught by Sato because organic electroluminescent element are widely utilized as a backlight for an LCD display. Fujita, col. 1, lines 13 – 18.

Claim 40

Sato teaches a display device comprising a light source. The light source comprises a first light source 118R that emits light in a red color range; a second light source 118G that emits light in a green color range; and a third light source 118G that emits light in a blue color range. Sato teaches first, second and third display elements [display sections 111R, 111G, and 111B] each illuminated by their corresponding light source. Sato, col. 11, lines 54 – 66; and figure 8. Sato teaches a combining optical system [image light synthesizing element 106] that combines images displayed in the first, second, and third display elements. Sato, col. 11, line 67 – col. 12. line 9; and figure 8. Sato, in figure 8, shows the first, second, and third light sources having

luminescent regions substantially the same size as those of display areas of the first second, and third display elements, respectively. Sato, figure 8. Sato teaches an optical system [eyepiece 115 or projection lens 104] that enlarges and displays the image combined by the combining optical system. Sato, col. 9, lines 59 – 61; col. 11, lines 50 – 52; and figures 6 and 8.

Sato does not specifically teach that the display element illuminated by the light combined by the combining optical system.

It would have been obvious to one of ordinary skill in the art at the time of the invention to illuminate the display element by the light combined by the combining optical system. Such system would allow a simpler system to drive only one display rather than three and would result in a smaller and less expensive display. Sato invites such consideration of alternative arrangements by teaching,

> The present invention has been made in consideration of such a situation, and has as its object to provide a liquid crystal viewfinder which allows easy arrangement of a liquid crystal panel, can increase the resolution, and can decrease the protrusion height from an image pick up apparatus.

Sato, col. 2, lines 14 – 19. Sato teaches as a variation of certain embodiments that one liquid crystal display and invites one to consider numerous arrangements of the display.

> In the above-described embodiment, the display sections 111R, 111G, and 111B for respectively displaying red, green, and blue images are formed on the single liquid crystal display panel 110. However, the display sections 111R, 111G, and 111B may be formed as separate liquid crystal display panels. In addition, these display sections 111R, 111G, and 111B are not limited to a liquid crystal display panel, and may be formed as a CRT or the like. Furthermore, the image light synthesizing element 106 is not limited to the dichroic prism obtained by bonding four prisms together, but may be constituted by an X type dichroic prism obtained by combining dichroic mirrors in the form of the letter "X".
>
> In the above-described embodiment, a display apparatus for synthesizing the red, green, and blue image light beams A_R, A_G, and A_B from the three display sections 111R, 111G, and 111B into one full-color image light beam

> A_{RGB} is exemplified. It is apparent that the present invention can be applied to various display apparatuses, e.g., a display apparatus wherein each of the display sections 111R, 111G, and 111B in the above embodiment is divided into two display sections for respectively displaying one and the other halves of an image, and red, green, and blue image light beams from these pairs of display sections, i.e., a total of six display sections are synthesized into on full-color image light beam, and a display apparatus wherein a display section for displaying an image or images of one or two of red, green, and blue, and a display section for displaying an image or image of the other two or one colors are respectively arranged at the positions of the green image display section 111G and of the red or blue image display section 111R or 111B, and the respective color image light beams from these two display sections are synthesized into one full-color image light beam.

Sato, col. 12, line 57 – col. 13, line 24. Sato concludes,

> However, the present invention can be applied to any liquid crystal display apparatus as long as it has three display sections 215a, 215b, and 125c corresponding to red, blue, and green arranged on the same plane. In addition, the present invention is not limited to the above-described embodiments. Various changes and modifications can be made within the spirit and scope of the invention.
>
> Additional advantages and modifications will readily occur to those skilled in the art. Therefore, the invention in its broader aspects is not limited to the specific details, and representative devices, shown and described herein. Accordingly, various modifications may be made without departing from the spirit or scope of the general inventive concept as defined by the appended claims and their equivalents.

Sato, col. 14, lines 23 – 38.

Sato does not teach that the light sources are organic electroluminescent elements. Nor does Sato teach a pulse current applied to each of the light sources.

Fujita teaches a driving circuit for an organic electroluminescent element for backlighting a liquid crystal display. Fujita, col. 1, lines 6 – 18. A pulse current supply source provides a pulsing current to the organic electroluminescent element to cause light emission. Fujita, col. 2, lines 39 – 41; col. 5, lines 21 – 34; and figures 13, 18, and 22.

For the reason stated in claim 30 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the organic electroluminescent element as taught by Fujita with the display device as taught by Sato because organic electroluminescent element are widely utilized as a backlight for an LCD display. Fujita, col. 1, lines 13 – 18.

5. Claims 32, 36, 37, 39, 42, 43, and 45 - 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al in view of Fujita et al. as applied to claims 30, 43, or 40 above, and further in view of Forrest et al., UPSN 5,707,745.

Claims 32, 36, and 42

Neither Sato nor Fujita specifically teach a pulse current to adjust the luminance of the light source.

Forrest teaches pulse width modulation to adjust the luminance of organic electroluminescent elements. Forrest, col. 14, lines 58 – 66.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the pulse width modulation to adjust the luminance of the organic electroluminescent elements as taught by Forrest with the display device as taught by Sato and Fujita. Forrest invites such combination by teaching the following objects.

> It is an object of the present invention to provide a multicolor organic light emitting device employing several types of organic electroluminescent media, each for emitting a distinct color.
>
> It is a further object of this invention to provide such a device in a high definition multicolor display in which the organic media are arranged in a stacked configuration such that any color can be emitted from a common region of the display.

> It is another object of the present invention to provide a three color organic light emitting device which is extremely reliable and relatively inexpensive to produce.
>
> It is a further object to provide such a device which is implemented by the growth of organic materials similar to those materials used in electroluminescent diodes, to obtain an organic LED which is highly reliable, compact, efficient and requires low drive voltages for utilization in RGB displays.

Forrest, col. 2, line 62 – col. 3, line 12. Forrest concludes,

> This device can be used to provide a low cost, high resolution, high brightness full color, flat panel display of any size. This widens the scope of this invention to displays as small as a few millimeters to the size of a building but to a practice limit. The images created on the display could be text or illustrations in full color, in any resolution depending on the size of the individual LED's.

Forrest, col. 15, lines 59 – 65.

Claims 37 and 43

Forrest teaches that different combinations or individual electroluminescent elements can be controlled to obtain a desired color. Forrest, col. 5, lines 21 – 25.

Claims 39 and 45

Forrest teaches each of a plurality of electroluminescent elements emitting light simultaneously. Forrest, col. 6, lines 27 – 44.

Claim 46

Sato teaches a display device comprising a light source [light sources 118R, 118G, and 118B]. The light source(s) illuminates a display element [liquid crystal display panel 110 comprised of sections 111R, 111G, 111B]. Sato, col. 11, lines 54 – 66; and figure 8. Sato teaches an optical system [eyepiece 115 or projection lens 104] that enlarges and displays the image combined by the combining optical system. Sato, col. 9, lines 59 – 61; col. 11, lines 50 – 52; and figures 6 and 8.

Fujita teaches a driving circuit for an organic electroluminescent element for backlighting a liquid crystal display. Fujita, col. 1, lines 6 – 18. A pulse current supply source provides a pulsing current to the organic electroluminescent element to cause light emission. Fujita, col. 2, lines 39 – 41; col. 5, lines 21 – 34; and figures 13, 18, and 22.

For the reason stated in claim 30 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the organic electroluminescent element as taught by Fujita with the display device as taught by Sato because organic electroluminescent element are widely utilized as a backlight for an LCD display. Fujita, col. 1, lines 13 – 18.

Forrest teaches a light source comprising a plurality of organic electroluminescent elements [LED 20, 21, 22] arrayed on a same substrate [glass substrate 37]. Forrest, col. 2, lines 62 – 65; col. 3, line 66 – col. 4, line 6; and col. 5, lines 4 – 16. The plurality of organic electroluminescent elements emitting light simultaneously. Forrest, col. 6, lines 28 – 31. Forrest teaches pulse width modulation to adjust the luminance of organic electroluminescent elements. Forrest, col. 14, lines 58 – 66.

For the reasons stated in claim 32, 36, and 42 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the pulse width modulation to adjust the luminance of the organic electroluminescent elements as taught by Forrest with the display device as taught by Sato and Fujita.

Claim 47

Sato teaches a display device comprising a light source. The light source comprises a first light source 118R that emits light in a red color range; a second light source 118G that emits light in a green color range; and a third light source 118G that emits light in a blue color range.

Sato teaches first, second and third display elements [display sections 111R, 111G, and 111B] each illuminated by their corresponding light source. Sato, col. 11, lines 54 – 66; and figure 8. Sato teaches a combining optical system [image light synthesizing element 106] that combines images displayed in the first, second, and third display elements. Sato, col. 11, line 67 – col. 12. line 9; and figure 8. Sato, in figure 8, shows the first, second, and third light sources having luminescent regions substantially the same size as those of display areas of the first second, and third display elements, respectively. Sato, figure 8. Sato teaches an optical system [eyepiece 115 or projection lens 104] that enlarges and displays the image combined by the combining optical system. Sato, col. 9, lines 59 – 61; col. 11, lines 50 – 52; and figures 6 and 8.

Fujita teaches a driving circuit for an organic electroluminescent element for backlighting a liquid crystal display. Fujita, col. 1, lines 6 – 18. A pulse current supply source provides a pulsing current to the organic electroluminescent element to cause light emission. Fujita, col. 2, lines 39 – 41; col. 5, lines 21 – 34; and figures 13, 18, and 22.

For the reason stated in claim 30 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the organic electroluminescent element as taught by Fujita with the display device as taught by Sato because organic electroluminescent element are widely utilized as a backlight for an LCD display. Fujita, col. 1, lines 13 – 18.

Forrest teaches a light source comprising a plurality of organic electroluminescent elements [LED 20, 21, 22] arrayed on a same substrate [glass substrate 37]. Forrest, col. 2, lines 62 – 65; col. 3, line 66 – col. 4, line 6; and col. 5, lines 4 – 16. The plurality of organic electroluminescent elements emitting light simultaneously. Forrest, col. 6, lines 28 – 31. Forrest

teaches pulse width modulation to adjust the luminance of organic electroluminescent elements. Forrest, col. 14, lines 58 – 66.

For the reasons stated in claim 32, 36, and 42 above, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the pulse width modulation to adjust the luminance of the organic electroluminescent elements as taught by Forrest with the display device as taught by Sato and Fujita.

Claim 48

Forrest teaches each of a plurality of electroluminescent elements emitting light simultaneously. Forrest, col. 6, lines 27 – 44.

6. Claims 33, 38, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato et al in view of Fujita et al. as applied to claims 30, 43, or 40 above, and further in view of Shioya et al., USPN 6,091,382.

Claims 33, 38, and 44

Neither Sato nor Fujita teach that the organic electroluminescent elements have micro-resonator structures.

Shioya teaches that the organic electroluminescent elements have micro-resonator structures. Shioya, col. 26, lines 38 – 55.

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the organic electroluminescent elements and the pulse currents taught by Shioya with the light source for the display device as taught by Sato and Fujita. Shioya invites such combination by teaching,

> It is an object of the present invention to provide a display device whose load is small and which performs a proper high time-division display operation with little variation in luminance and little crosstalk among pixels, and to realize a high-resolution, large screen having a high opening ratio and a very low profile.

Shioya, col. 1, line 66 – col. 2, line 4. Shioya invites specifically the combination described by teaching,

> The driving method for the display device of this embodiment has been described above. By using this method, data erase can be arbitrarily performed as well as data write and setting of the data hold time. The driving method of this embodiment is characterized in that driving with a memory function can be performed without crosstalk, obtaining substantially the same effects as those obtained by a liquid crystal display device using TFTs. In addition, since static liquid crystal driving can be performed with a simple matrix electrode structure, high-quality display can be performed.

Shioya, col. 29, lines 40 – 49.

Response to Arguments

7. Applicant's arguments with respect to claims 30, 32 – 34, 36 – 40, and 42 - 48 have been considered but are moot in view of the new ground(s) of rejection.

Allowable Subject Matter

8. Claims 21 – 27 and 49 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 21 describes a relation between D and P being such that D is 10 times P. Although the separation 110 (analogous to D) in Lengyel, USPN 5,754,262, would be orders of magnitude more than the distance (between the elements as analogous to P) shown in Littman et al., USPN

5,688,551, none of the prior art teach the relation being such that D is exactly ten times P. Claims 22 – 27 and 49 are dependant on allowed claim 21.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Himeshima, JP 09188875 A, teaches a organic EL element for a backlight responsive to a pulse current.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leland R. Jorgensen whose telephone number is 703-305-2650. The examiner can normally be reached on Monday through Friday, 7:00 a.m. through 3:30 p.m..

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

lrj

DENNIS-DOON CHOW
PRIMARY EXAMINER